

Willerby Carr Lane Primary School - Science

Topic: Electricity

Year: 6

Strand: Physics

What should I already know?

- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors

What will I know by the end of the unit?

Which symbols are used to represent components in a simple circuit diagram.	<ul style="list-style-type: none"> • Circuit symbols are used in circuit diagrams showing how a circuit is connected together. Symbols allow for universal identification. • The actual layout of the components is usually quite different from the circuit diagram.
How the volume of a buzzer/ brightness of a bulb is affected by the number and voltage of cells used.	<ul style="list-style-type: none"> • Adding more batteries increases voltage, therefore making bulbs brighter, buzzers louder and motors move faster. • Using batteries with a higher voltage increases energy supply, thus making bulbs, buzzers or motors, brighter, louder or faster.
Explain reasons for variations in how components function, including bulbs, buzzers and the position of switches.	<ul style="list-style-type: none"> • Through varying components, different results can be achieved, such as: adding more buzzers, bulbs or motors would result in dimmer, quieter or slower components; altering wire length affects the brightness, sound or speed, of bulbs, buzzers and motors; varying the position/composition of switch affects the function of the circuit. • A simple loop with all bulbs/ motors connected in line (in series) is called a Series Circuit. • Two loops, both connected to the battery, each with it's own bulb/ motor is called a Parallel Circuit.

Vocabulary

battery	small devices that provide the power for electrical items such as torches
bulb	the glass part of an electric lamp, which gives out light when electricity passes through it
buzzer	an electrical device that is used to make a buzzing sound
cell	a synonym for battery circuit a complete route which an electric current can flow around
circuit	a complete and closed path around which a circulating electric current can flow.
component	the parts that something is made of
conductor	a substance that heat or electricity can pass through or along
current	a flow of electricity through a wire or circuit
electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices
energy	the power from sources such as electricity that makes machines work or provides heat
filament	a conducting wire or thread with a high melting point that forms part of an electric bulb.
fuel	a substance such as coal, oil, or petrol that is burned to provide heat or power
generate	cause it to begin and develop
insulator	a non-conductor of electricity or heat
LED	A light emitting diode
mains	where the supply of water, electricity, or gas enters a building
motor	motor a device that uses electricity or fuel to produce movement
power	power is energy, especially electricity, that is obtained in large quantities from a fuel source and used to operate lights, heating, and machinery
series circuit	a simple loop with all bulbs/ motors connected in line (in series)
source	where something comes from
switch	a device for making and breaking the connection in an electric circuit.
voltage	voltage – an electrical force that makes electricity move through a wire, measured in volts.
wires	a long thin piece of metal that is used to fasten things or to carry electric current

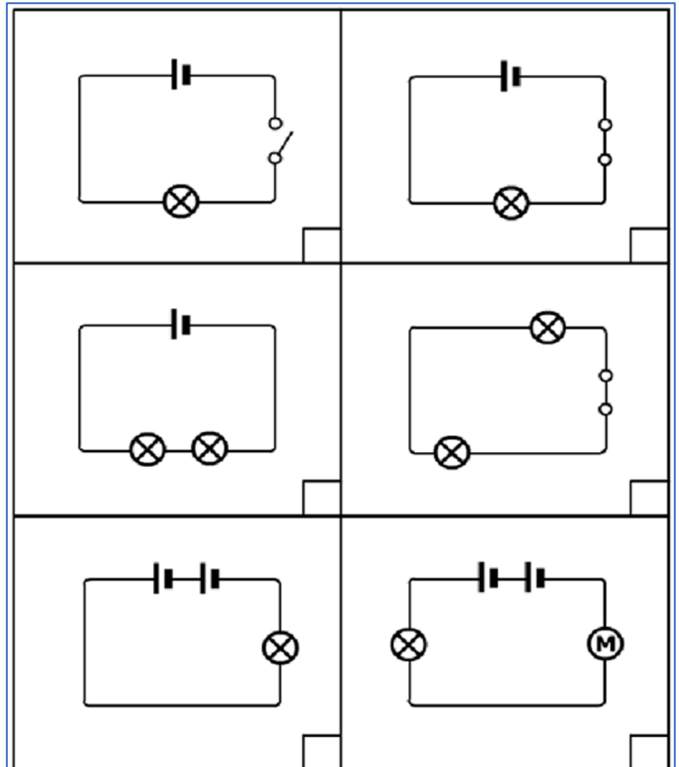
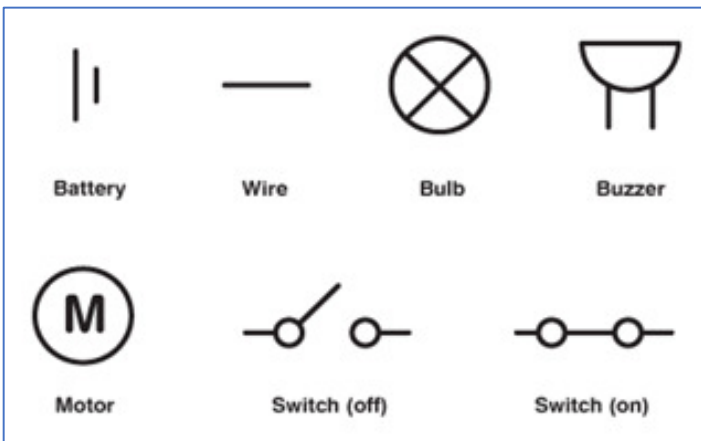
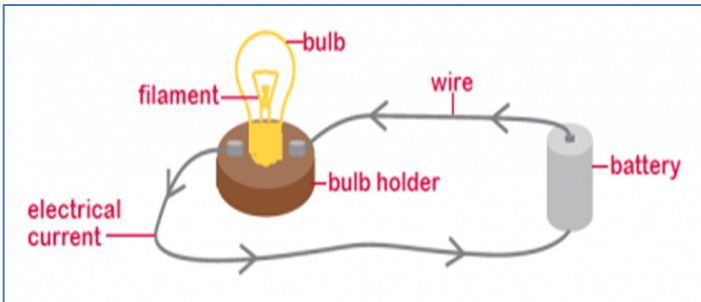
Investigate!

- Use knowledge of symbols to create written diagrams and make a variety of circuits.
- Apply knowledge of voltages to create circuit variation, investigating the effect on a buzzer.
- Compare a series circuit to a parallel circuit
- Plan and investigate the effects of varying components in a circuit.
- Create a mini-buzzer game, which could include micro-bit monitoring to show how often the wire has been touched
- Create a wind powered turbine to light up an LED

Common misconceptions

Some children may think:

- larger-sized batteries make bulbs brighter
- a complete circuit uses up electricity
- components in a circuit that are closer to the battery get more electricity.



Study the circuits below and match them to the appropriate circuit diagram.

